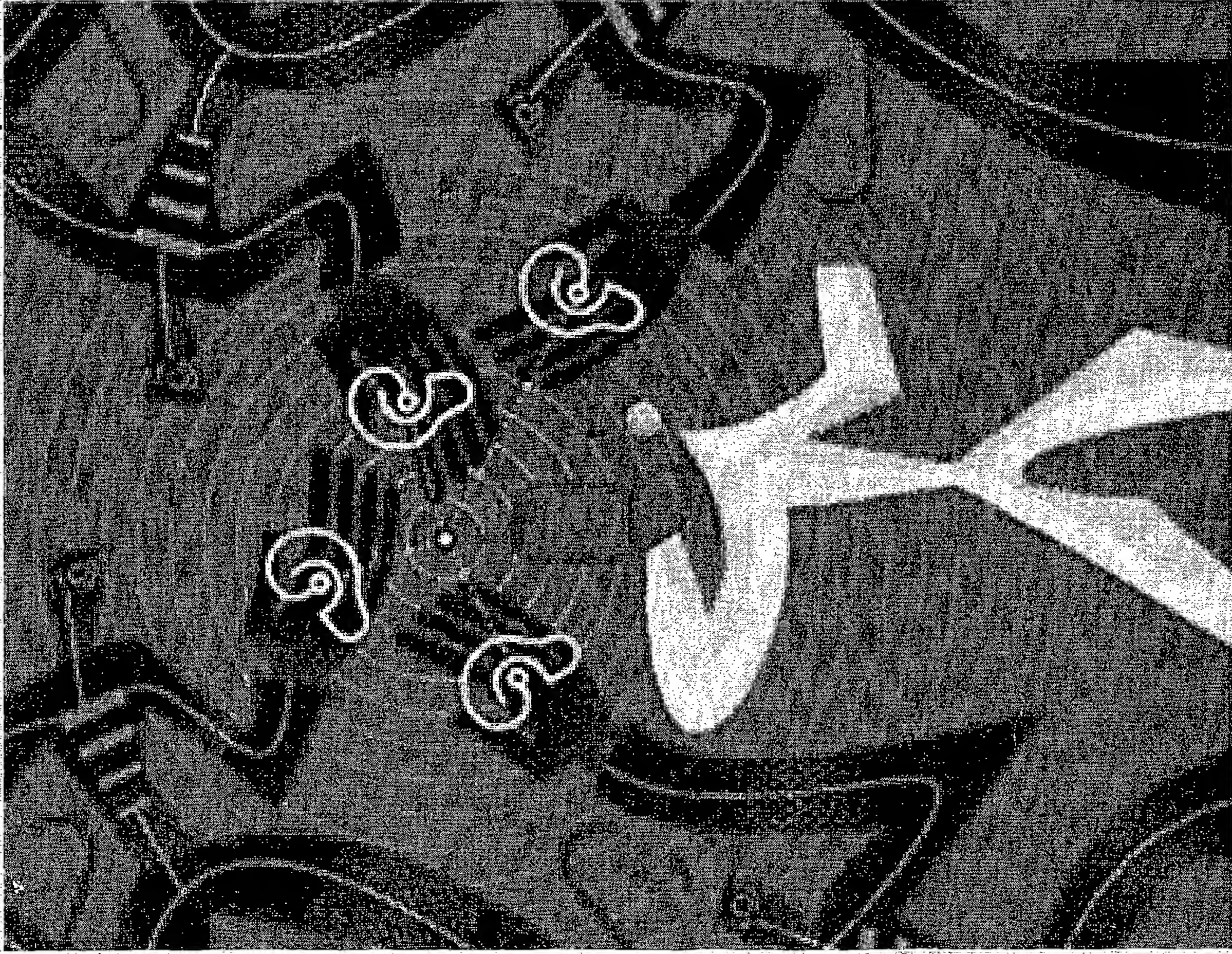


business unplugged: [part3]

THE WIRELESS BATTLEGROUND

Hundreds of wireless middleware providers are fighting for the chance to offer you the key component of your enterprise's wireless solution. To help you better understand the major technical issues involved in implementing a mobile platform, we have compiled profiles of some of the key players in wireless middleware.

by Michael Jarosik, managing editor



There is a war being waged for control of the wireless enterprise, and it is being fought on many fronts. Companies are carefully positioning themselves for the impending onslaught, and cautious alliances between carriers, middleware companies, access providers, and device manufacturers are blurring the battle lines.

The war creates conflict for enterprises, which are trying to find ways to capitalize on the newfound opportunities created by wireless data access. So many battles remain for technology providers, however, that it is difficult to cling to a clear perspective of what wireless really means to business.

The stakes for the enterprise are incredibly high. While there is an inordinate amount of hype being spewed at executives about the possibilities of wireless, mobile technology will truly result in no less than a shift in the cultural mindset about where and when work can be accomplished.

AGEA

AIRWEB

AVANTGO

BROADREAM

EXTENDED SYSTEMS

GADGETSPACE

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For executives, the most important battle to monitor is the one taking place in wireless middleware. The middleware platform is the key component to a company's wireless solution, and there are currently hundreds of vendors vying for a piece of this unquestionably lucrative market.

The shakeout in this space will be immense and is already underway. Middleware providers are rapidly modifying their offerings to accommodate the demands of early adopters. Additionally, it seems imminent that many of today's key players will be acquired or will cease operations entirely.

Analysts predict that as many as 95% of the standalone platform providers existing today will be gone in the next 18 months. Those that survive will hold the key to the wireless enterprise.

It is crucial for a company's mobile strategists to understand the role that a middleware platform plays in extending corporate data to wireless devices.

Once a company has determined what portion of its data to extend, the data source must be integrated to the middleware platform. The platform then extracts the data stored on a company's servers (Web, application, and/or database servers) and transforms it into a format that is optimized for display on specific types of handheld devices, including Internet-enabled cellphones, PDAs (personal digital assistants), and pagers.

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A good middleware platform is the key to supporting the many wireless networks that currently exist in the U.S. Additionally, there are several key features to a wireless middleware solution that enterprises can leverage to extend their applications.

The following features should be primary considerations for companies evaluating middleware platforms, and they also serve as the major points of distinction for most of the vendors in the market.

The number-one concern of executives implementing a mobile strategy is the lack of wireless infrastructure in place in the U.S. Inevitably, mobile employees will encounter times when a wireless connection is unavailable. The best middleware platforms on the market today allow users to maintain sessions on their mobile devices even when the connection cuts out. Data is stored temporarily on the client, and when a connection becomes available, the device is automatically synchronized to the host.

A major distinction for some of the best wireless middleware providers is the ability to extend data from the application layer. This means that the data being sent to a wireless device does not have to be previously formatted for the Web. Many important enterprise applications are often not Web-enabled, and there can be tremendous value in extending some of them to mobile devices. For

many sales-force automation tools, for example, a platform that only extends data residing on a Web server will not get the job done.

When a company extends an application so that it can be performed on a wireless device, it is not the entire application that is extended. Data sent out through the middleware platform has to be carefully selected because of slow connections and low storage capacity on handheld devices. While a systems integration (SI) firm may be best suited for helping a company select the necessary data to extend, enterprises should seek a middleware provider that has business logic capability as well.

The source of the data a company decides to extend must be integrated with the middleware platform it chooses to implement. Yet most platform providers do not have the ability to integrate their middleware to a company's back-office applications. As a result, many early adopters are enlisting SIs to build connectors to specific applications. While some of the more advanced platform vendors are developing connectors as well, it seems logical that some of the major EAI (enterprise application integration) vendors will enter this market very soon.

Because there are so many different types of devices in the field, it is difficult to optimize content delivery for each. For

m-commerce applications especially, companies have little control over the types of devices being used. A core component of wireless middleware is the ability to write to multiple devices and optimize content display for all of them—without having to format data for each type of device individually.

Device heterogeneity should be considered a mandatory feature of wireless middleware. Companies should seek a technology provider that offers an advanced development platform in addition to its core middleware product.

With a massive shakeout on the horizon and subtle differences between the companies in the market, the stakes are high for selecting a middleware survivor.

The value of seeking third-party counsel is three-fold. Perhaps most importantly, it helps the enterprise develop a strategy that will yield the greatest possible ROI (return on investment). Consultants can help a company determine which business processes to extend.

Secondly, companies can better determine which technology providers to enlist. With a massive shakeout on the horizon and subtle differences between the companies in the market, the stakes are high for selecting a middleware survivor.

Third, the implementation burden on the enterprise is relieved. Enterprise wireless solutions are relatively fragmented and require the involvement of multiple technology providers.

First-generation platform providers were "screen scrapers," taking data from existing Websites and transcoding it so that it could be viewed on Internet-enabled cellphones. Buyers should be aware that while no capable wireless middleware company on the market today is still focused solely on screen scraping, many of them cite device heterogeneity as a distinguishing characteristic of their offerings.

The middleware platforms available today are distinguished by their scope of functionality and by the strength of their technology. For a complete technical evaluation, early adopters are wise to seek the counsel of an analyst, consulting, or systems integration firm.

As a result, many middleware companies sell through channel partners to assist with integration and application development.

To help companies develop a short-list for potential platform providers, and to help them better understand the technical issues involved in implementing a mobile strategy, e-com has profiled 30 of the key players in wireless middleware.

Each vendor has been broken down into seven information categories. The profiles focus on business functionality, and are intended as a starting point for becoming familiar with the companies in the market and the products they offer.

middleware companies, and for good reason. Deploying their products through channel partners allows platform vendors to focus on their core competency and build traction by being embedded on as many applications as possible.

The e-com profiles focus on five fundamental classes of middleware channel partners.

A. Systems Integrators (SI). Partnerships with SIs are vital for middleware vendors and are also powerful indicators for which companies have the best platforms. An SI is not going to build applications on vaporware after they've evaluated the lion's share of the market. Close ties to consulting and integration firms indicate that a company has a platform that is preferred by the people who know the industry best.

B. Independent Software Vendors (ISV) / Value-Added Resellers (VAR). For small vendors especially, securing a strong vertical industry focus is important as the market matures. This makes industry-focused channel partnerships crucial for platform providers. @hand, for example (profiled in the June issue), has two channel alliances that have helped it build significant traction in the utilities industry.

C. Original-Equipment Manufacturers (OEM). OEM alliances represent another valuable channel for middleware providers because many enterprise application vendors are expanding their own offerings to offer wireless capability. While this may not represent a complete wireless solution for the enterprise, it does represent a logical first step for mainstream adopters.

The 15 companies profiled in this issue were selected to represent a relatively wide range of wireless middleware solutions. Some of the vendors are not pure platform providers, but are included to make executives aware of some of the variations of wireless middleware, including synchronization specialist Extended Systems and wireless Internet service provider GoAmerica.

Vendors typically assess their competition based on specific vertical markets. For instance, a platform provider may compete with different companies in financial services than it would in healthcare. Vertical expertise is a significant strength of several middleware companies, and enterprises should research which technology providers have experience in their industries.

For early adopters, wireless can still be a significant competitive advantage. As a result, some enterprises may be reluctant to announce their implementation with a particular middleware vendor. However for the most part, the reason that client references are relatively scarce is because they are mostly non-existent. Be aware that while many middleware providers tout a strong focus on the enterprise, many have been forced to turn to other markets for early traction.

Partnerships are emerging as the lifeblood of many wireless

D. Enterprise Application Integration Vendors (EAI).

Although the major integration players are likely to eventually want their own piece of the wireless middleware market, for now partnerships with integration vendors such as BEA Systems and TIBCO indicate an effort by the platform provider to enable the integration component between the middleware and the application server.

E. Application Service Providers (ASP). See "business model" below.

A complete analysis of a technology provider's funding would include an examination of its rate of spending as well as a breakdown of its revenue, earnings, and financing schedule. The financial statistics included in the e-com profiles are intended only to give a general sense of the company's size and available funds.

While its sharpest focus should be on a core mobile platform and related functionality, several of the more advanced middleware providers also offer separate development platforms designed to customize content display on specific mobile devices.

The general direction of the wireless middleware market is shifting away from a hosted model in favor of a licensed one. Vendors are discovering that many early adopters have

a strong preference for housing their data behind their own firewalls. In addition, the hosted model is notorious for eating massive amounts of cash.

As a result, most platform vendors license their middleware and supplement their offerings with a hosted option, usually through partnerships with ASPs. This option is particularly attractive to early adopters running pilot phases.

The hosted model is likely to see a resurgence once the market evolves beyond the early-adopter phase. In certain industries such as healthcare, the inability to run and support wireless applications has led to a preference for the hosted model as well.

Deploying their products through channel partners allows platform vendors to focus on their core competency and build traction by being embedded on as many applications as possible.

After selecting 30 companies for the e-com profiles, one representative from each was asked what distinguishes his/her company in the marketplace and why it would survive the impending shakeout in wireless middleware. Selected portions of their responses are included in each company profile.

Additionally, e-com compiled a panel of eight experts from selected analyst and systems integration firms for third-party commentary on the companies being profiled. The panelists offered perspective that could not have been obtained from

speaking only with the vendors, and the commentary reflects their first-hand experience evaluating and deploying the specific middleware platforms.

The eight panel members were selected for their expertise in mobile technology and for their focus on the wireless middleware market specifically. The e-com panel members are:

Gaughan is the principal wireless analyst for AMR Research, www.amrresearch.com, Boston, Mass. More than any other analyst, Gaughan has displayed the ability to understand and articulate the significance of the many product announcements and alliances made every week in the wireless market.

Bolin is the wireless national practice leader at Ciber, www.ciber.com, Greenwood Village, Colo., a systems integration firm. Ciber hosts a series of seminars around the country to help executives better understand the technical issues involved in going wireless. Bolin's clear strength is an understanding of the mindset of executives seeking to implement wireless technology.

Egan and Redman are wireless research directors at Gartner, www.gartner.com, Stamford, Conn. As a firm, Gartner has defined analyst coverage of wireless middle-

ware. The group's "Wireless Application Gateways: A Technology Perspective," published in November, was the first in-depth profile of specific wireless platforms and had a considerable influence on this article.

LiveSky, www.livesky.net, Boston, Mass., is a systems integration firm focused exclusively on wireless technology. Raab is senior consultant and principal designer, and Yen is president and co-founder. LiveSky's panel commentary conveys a deep-seeded knowledge of the market, formed in part by the company's business and technical evaluations of wireless platforms.

The in-depth technical evaluations of platform vendors conducted by Stellcom, www.stellcom.com, San Diego, Calif., a wireless systems integration firm, had an enormous influence on the e-com profiles and anchor the company's clear mastery of the wireless middleware space. Lane is Stellcom's alliances program manager and Schroeder is chief marketing officer.

In the panel commentary, the terms WAG (wireless application gateway) and WASP (wireless application service provider) are used periodically. WAG is a term coined by Gartner that simply means a wireless middleware provider. A WASP generally refers to a wireless middleware provider with a hosted offering.

AGEA

www.agea.com

Austin, Texas

Founded: 1999

Background: AGEA has sharply focused, enterprise-friendly technology, but does not have any solid enterprise customer references. It does, however, tout impressive partnerships with systems integrators and OEMs, which represent an ideal method for the delivery of its software to early adopters.

Functionally, AGEA has technology that is ahead of the curve. On top of its core MobileWorks platform, AGEA builds applications that extend beyond extracting relevant data from enterprise applications from Siebel, Ariba, i2, and others (although it does that as well). Formerly agentGO.

Industry Focus: telecommunications, utilities, airlines

Enterprise Clients: not available

Key Partnerships: Momentum, Mobilocity, Motorola, Glenayre, BEA Systems

Funding: \$10 million (two rounds, closed series)

Middleware Product: AGEA MobileWorks

Business Model: licensed only

AGEA: "We understand our position in the food chain; very quickly, we understood our identity and our advantages. On the server side, no one has the Java infrastructure that we have. Pretty soon, you're going to see some partnerships being announced with some of the database and application server infrastructure players."
—Andrés Carvallo, CEO

AMR Research: "AGEA has built some value-added applications on top of their platform that are complementary to some of the applications that companies are extending. That's a strategy you'll see more and more.

"If a company can provide services such as improved messaging to complement field sales, or location technology to complement field service, those are the kinds of value-added services that are a differentiator."

Stellcom: "These guys are a dark-horse pick as a small outfit with big ideas. More than just the transcoding solution offered by most WAGs, these folks understand that you need to extend the business logic, not just the presentation layer, in a device-specific way to achieve maximum functionality.

"The entire framework is not complete, but if you're an early adopter and a Java advocate, then you need to check AGEA out."

Air2Web

www.air2web.com

Atlanta, Ga.

Founded: 1999

Background: Air2Web may act as one of the best indicators of how and when the impending market shakeout will occur. The company owns one of the most respected platforms in the industry, and the nuances of its offering will be a great battleground for startup independence.

Its ASP offering with Exodus, www.exodus.com, Santa Clara, Calif., may help reveal the viability of the hosted model and help determine who will ultimately own that market. Likewise, Air2Web's impressive network of channel partners will be a great indicator going forward for how wireless solutions will be implemented and who will interface to the enterprise.

Industry Focus: financial services, logistics, et al

Enterprise Clients: UPS, ING Barings, NetBank, Bass Hotels & Resorts (Holiday Inn)

Key Partnerships: PricewaterhouseCoopers, Stellcom, Ericsson, Vitria, Exodus

Funding: \$35 million (iGATE Capital, et al)

Middleware Product: Air2Web Mobile Internet Platform

Business Model: hosted only

Air2Web: "We can build applications across all different industries. If you look at our customer base, we have B2C customers like UPS and Bass Hotels, we have customers that are doing sales-force automation applications, competitive-intelligence applications, as well as B2B applications. We actually make applications interactive as opposed to just pushing data out to devices." —Fred Tanzella, vice president of product management

Gartner: "They have one of the stronger ASP plays for wireless gateway systems. The Air2Web servers render the data to wireless devices via XSL style sheets. Applications have the capability to support multiple devices from one interaction definition using a blend of media as appropriate based on the type of device."

Stellcom: "Their real strength as a WASP is coverage. The solution encompasses a huge variety of devices from pagers to PDAs. Of equal significance is the fact that they have arrangements with most of the major carriers, including international ones. However, as with any WASP, integration to your enterprise applications is limited to the XML stream you can push from the apps to the hosted service. For global enterprises that do not want to host their own solution, Air2Web is a top contender—just ask UPS."

AvantGo

www.avantgo.com

Hayward, Calif.

Founded: 1997

Background: PDA users know AvantGo for its hundreds of content "channels," delivered through its mobile Internet subscription service and designed so that users can access information whether or not a connection is available. Similarly, the company's enterprise offering is focused in large part on the disconnected user.

AvantGo has shown tremendous vision for creating an offering that coexists with today's wireless infrastructure (or lack thereof). To endure, the company's platform must evolve as the market niches it now occupies become less prominent.

Industry Focus: financial services, healthcare

Enterprise Clients: Ford Motor, McKessonHBOC, American Express, Alcatel, Northwest Airlines

Key Partnerships: Logica, Symbol Technologies, Palm, Brightpod

Funding: NASD: AVGO (market cap 4/27/01: \$98.6 million); also funded by Microsoft, 3Com, Research in Motion

Middleware Product: AvantGo 4.0 M-Business Server

Business Model: licensing focused with hosted offering

AvantGo: "Our software works on all the different wireless networks around the world. It's a shrink-wrapped software application that is installed and managed centrally by an IT organization, and is already bundled with all of the leading mobile devices. These are huge advantages for our customers, and huge competitive barriers for our competition." —Felix Lin, chairman and co-founder

Gartner: "The primary usage of AvantGo Enterprise is for business-to-business applications—doing transactional applications in offline, synchronization mode using a PDA. We have spoken to a couple of AvantGo enterprise users who find that this approach is much more practical than using an online approach because of the unreliability of wireless networks."

LiveSky: "AvantGo is best for applications where you want to do offline browsing of content on static Web pages. They're good for things like training manuals and maintenance documentation. But it's less useful in a transaction-based system—I certainly wouldn't want to build an order-entry system around AvantGo. They're great for storing, say, your parts catalog on a handheld device. You can actually order through it because you can have forms stored on the device and then synch later."

Broadbeam

www.broadbeam.com

Princeton, N.J.

Founded: 1992

Background: One of the only true veterans of wireless middleware, Broadbeam is also unlike its counterparts in that it has expanded its focus from strictly licensing its software to gradually moving down the hosted path. This is the opposite of the current general direction of the industry.

It also creates a potential advantage for Broadbeam. As the market expands beyond the early adopter stage, smaller divisions within companies, as well as small to midsize enterprises will begin deploying wireless solutions. They will not have the resources to deploy inhouse, creating a ripe market for a vendor positioned to offer a stable hosted offering. Formerly Nettech Systems.

Industry Focus: insurance, utilities, telecommunications, healthcare, et al

Enterprise Clients: BellSouth Telecommunications, Telia, WorldCom, FedEx Ground, Sears

Key Partnerships: MobileCast, iMedion, Symbol Technologies, Palm

Funding: four rounds totaling \$46.2 million (ABS Venture Capital, et al)

Middleware Product: ExpressQ Application Server

Business Model: licensed; hosted offering created in 2000

Broadbeam: "From the beginning, we haven't tried to own the customer. We've been very focused on providing wireless middleware, and delivering that to enterprises through channels. It allows us to scale our business because we don't need to become experts in a particular field. We feel that our goal is not to own the customer, but to be embedded in as many applications as possible." —Tamara Gruber, director of marketing

AMR Research: "I've been kind of waiting for Broadbeam to break out. They've been around for a while and they have proven technology, but they haven't been able to capture the mindshare like some of the other companies. They haven't been able to take the next leap as far as their overall market size and mindshare in the enterprise. But from a technology perspective, they're solid."

Gartner: "Broadbeam is a survivor of the wireless middleware space; they may be the oldest company (profiled by e-com) that's been focused in the mobile and wireless space. They have a lot of vertical experience. They're a newer player in the ASP and horizontal markets, so they're still developing."

Extended Systems/Palm

www.extendedsystems.com

Boise, Idaho

Founded: 1984

Background: In a move announced in early March, Palm acquired Extended Systems for an estimated \$264 million. The acquisition is expected to close in June, and when it does, Palm will have obtained the company regarded as the top provider of synchronization technology for PDAs.

The acquisition does not move Palm into competition with wireless middleware providers, but it is an aggressive move toward the enterprise space. The deal also means that Palm will no longer license synchronization technology from Aether Systems, which may have a compelling ripple effect on the market.

Industry Focus: healthcare, financial services, manufacturing, et al

Enterprise Clients: British Airways, Eli Lilly, Zurich Financial, Coors Brewing Co.

Key Partnerships: IBM, Ericsson, Motorola, Microsoft

Funding: NASD: XTND (market cap 4.27.01: \$103.4 million)

Middleware Product: XTNDConnect Server

Business Model: licensed only

Palm/ESI: "One of the reasons Palm acquired us was that they wanted to have a solution set that would support all of the platforms currently available as well as those anticipated. So not only did they want to have excellent Palm OS support from our offering, they also wanted to make sure they had excellent Pocket PC support, as well as WAP and even RIM support, all of which we provide."

—Steve Simpson, president and CEO

Ciber: "When Extended Systems officially becomes part of Palm, they will be the organization with probably the best mindshare in the mobile space."

"What ESI provides to Palm is the ability to take disparate information being gathered on many handheld devices and bring that back into a centralized database. However, the concern is that Palm is much better positioned for serving individual mobile users versus the wireless enterprise."

Gartner: "Extended Systems has had fairly good traction in the market because IBM has used them, and Microsoft has even recommended them in certain cases. Yet with the acquisition by Palm, I think they are going to be hurt in terms of their overall market attraction because other players like IBM and especially Microsoft might question working with them in the future."

GadgetSpace

www.gadgetspace.com

Cary, N.C.

Founded: 2000

Background: GadgetSpace is a spinoff of Haht Commerce, www.haht.com, Raleigh, N.C., one of the major vendors in the sell-side e-commerce software market. As a result, GadgetSpace has strong ties to enterprise application vendors, including Haht's close relationship with SAP.

The company's deployments are almost evenly split between hosted and licensed engagements. A particular strength of GadgetSpace is its ability to help companies develop custom applications, making its Sendero hosted product a natural choice for the industries it targets.

Industry Focus: healthcare, utilities, manufacturing, distribution, et al

Enterprise Clients: Celanese Chemical, Symbol Technologies, Williams Brothers Lumber

Key Partnerships: Formulasys, Zensar, edgecom, Motorola, Haht Commerce

Funding: \$5.5 million (Southeast Interactive Technology Funds, Aurora Funds)

Middleware Products: FastPath Mobile Application Service (hosted), Sendero Corporate Gateway (licensed)

Business Model: hosted and licensed

GadgetSpace: "From day one, we have chosen to focus on a strategy that involves and leverages third-party providers. We believe that success in this space will be measured by business partnerships and by a focus on natural channels for custom mobile applications.

"A company is not going to invest half of a million dollars in a mobile application framework, but they will invest money in a mobile application that delivers a result."

—Karl Schlatter, chief marketing officer

AMR Research: "GadgetSpace is a good company to go to if you want to be able to very quickly extend your enterprise applications out using a hosted service. Because of their ties to Haht, they have a good working relationship with enterprise application vendors.

"They came from that space, so they know how to sell into the enterprise, which I think is an important differentiator for them."

Gartner: "They've very small and don't have much traction yet or pull in the marketplace. They are likely going to struggle against generic WAG suppliers like Brience and Mobileum."

GoAmerica

www.goamerica.com

Hackensack, N.J.

Founded: 1995

Background: GoAmerica is not a pure middleware provider, although it does offer a platform that includes the same basic functionality. The company is best described as a wireless Internet service provider, offering everything from asset management to overseeing relationships with carriers.

GoAmerica takes a lot of the headache out of going wireless, but its offering is also not designed to handle a lot of complexity. The company is a valuable one-stop shop for extending corporate email or simple applications, and for a customer that's not ready to extend more complex applications. GoAmerica is a stable alternative to the more advanced middleware platforms.

Industry Focus: financial services, pharmaceutical, et al

Enterprise Clients: not available

Key Partnerships: EDS, Oracle, Microsoft, Compaq, Afaria

Funding: NASD: GOAM (market cap 4.27.01: \$178.8 million)

Middleware Product: Go.Web

Business Model: hosted and licensed

GoAmerica: "We have a browser that we can put on all of the different devices. We can also handle the management of the communication companies, such as AT&T, Verizon, BellSouth, Ricochet, and Motient. We manage that for companies and get better rates for them because we're a bigger aggregator of what they do." —Peter Vogt, director of technical services

Gartner: "GoAmerica is a small systems integrator. They're on the right track, but they might not have the muscle to survive when the big guys enter this space."

LiveSky: "GoAmerica is a gateway to corporate email; it's not a platform to build an application on. For one-stop shopping for multiple devices on a nationwide basis, I think they're the ones to go with. If you're just interested in Palm support, then you may be better off with someone like OmniSky. But for multiple devices, namely Palms and RIMs, I think GoAmerica is the vendor of choice."

Stellcom: "They'll go into your company, give all of the salespeople a device, for instance, and utilize their middleware solution. And if you don't want to do it inside your firewall, they'll go ahead and host it. They really offer a complete solution, but they're not enterprise heavy."

iAnywhere

www.iAnywhere.com

Emeryville, Calif.

Founded: 2000

Background: iAnywhere is a subsidiary of noted database specialist Sybase, www.sybase.com, Denver, Colo. The company's roots are in portable database technology, and it has expanded its parent's strengths in the financial services and telecommunications industries.

Sybase's acquisition of EAI vendor NEON could have major implications for iAnywhere's strength in the wireless market. The combination gives the camp increased ability to extend data from the application layer, one of the key components of a wireless middleware solution.

Industry Focus: financial services, telecommunications, healthcare, retail, et al

Enterprise Clients: not available

Key Partnerships: PricewaterhouseCoopers, Ericsson, Palm, Symbol Technologies

Funding: wholly owned subsidiary of Sybase Inc.

Middleware Product: iAnywhere Wireless Studio

Business Model: licensed and hosted

iAnywhere: "We are focused on what we call the 'always-available' computing model. That means that we look at a complete range of ways to deliver information and applications, including both the thin-client mobile Internet view of the world, as well as the smart client.

"You take advantage of the fact that you have a significant mobile computing device, and run applications locally on that device." —Rob Veitch, director of business development

AMR Research: "They're broadening their scope from the mobile database and really looking to become more of a full-featured wireless provider. Sybase as a company has strong financial services and telecom background, and iAnywhere has some experience in utilities as well, so they've kind of taken a vertical slant to this. But their primary focus is still on the mobile database."

Ciber: "I think the acquisition of NEON by Sybase creates a very powerful tool that has grown up in the pure enterprise middleware space.

"By developing a wireless strategy out of that traditional middleware level, you now have a company that understands data extension, both at the application level and at the Web level. And that creates a very compelling story."

iConverse

www.iconverse.com

Waltham, Mass.

Founded: 1999

Background: iConverse offers easily one of the most advanced wireless middleware platforms on the market. Its iConverse Mobile Studio is one of the most highly regarded development platforms available, and sets the current standard for customizing content to multiple devices.

Its strength in content development makes it one of the key players in m-commerce applications where device constituency can't be controlled. iConverse also provides development tools that allow enterprises to create their own adapters to enterprise applications.

Industry Focus: financial services, manufacturing, retail

Enterprise Clients: Thomson Financial

Key Partnerships: LiveSky, Stellcom, Mobilocity, PFN, Motorola, Nokia, Palm, Research in Motion, BEA Systems

Funding: \$16.2 million (Prism Venture Partners, Advanced Technology Ventures)

Middleware Product: iConverse Mobility Platform

Business Model: licensing focused with hosted offering

iConverse: "We can delve into all of a company's existing data sources and allow them to leverage their existing IT investments, as well as use the business logic of those existing business applications. You're transferring the business functionality that you've spent the past five years developing and extending it to mobile." —Leah Gabriel, director of corporate communications

LiveSky: "iConverse's big plus is being able to support voice as well as data. For devices that can support voice in and data out, iConverse's platform is a good one to build on. Another one of their strengths is the authoring system. As you're creating the interface, you can see how it would appear on the various devices. With a lot of other systems, you're basically writing script and it isn't until you actually run it on the device that you can see how it actually gets rendered."

Stellcom: "Without a doubt, this WAG offers the best-of-breed integrated development environment. Their development studio uses an intuitive class-tree approach to designing the presentation layout. For example, it's very easy to drill down to create an exception for a single handset without changing the entire phone 'class.' The simulators are well integrated and the interface already exists for voice. If you don't require deep integration to enterprise applications, this is a great tool for mobilizing information to a wide variety of devices."

IBM

www.ibm.com

Armonk, N.Y.

Founded: 1897

Background: Much of IBM's early traction with WebSphere Everywhere has come overseas, particularly with banks and carriers. The company is releasing a much-anticipated upgrade of its suite in July, with improved security and management capabilities expected.

Transcoding Publisher is the core middleware component of the Everywhere suite, and handles core functionality such as session management and application-layer extension. IBM's early platform developments, coupled with its mammoth resources and overall presence in e-business, make it primed to be the dominant player of wireless middleware.

Industry Focus: financial services, telecommunications (carriers), airlines, retail, et al

Enterprise Clients: Delta, Handelsbanken

Key Partnerships: MicroStrategy, Luminant, Rare Medium, Palm, Research in Motion, Extended Systems

Funding: NASD: IBM (market cap 4.27.01: \$204.6 billion)

Middleware Product: WebSphere Everywhere Suite

Business Model: licensing focused with hosted offering

IBM: "We're trying to extend the middleware that our customers have already purchased from us. We've been in the e-business game for five years now, and almost everything we have done with WebSphere Everywhere is an extension of that existing infrastructure."

"We have a huge e-business customer base that, assuming there's an ROI for doing it, will look for us to help with wireless." —Michael McGinnis, global program director, Pervasive Computing

AMR Research: "IBM has an opportunity to command a pretty extensive piece of this market. They've got a much more cohesive product than they did six months ago, but I think it's still kind of a few separate products that they're bringing together."

"But IBM is going to be a major player here because they're committed on the technology side and they have an army of global services people to help with the implementations."

Ciber: "When IBM finally reveals what their wireless platform is capable of, they may have the ability to shake up the industry. However, at the current time, we have not seen the final product—and right now, it's more hype than reality."

ISOVIA

WWW.ISOVIA.COM

Boston, Mass.

Founded: 1999

Background: Isovia is a model middleware startup: it has a sharp industry focus, a solid network of channel partners, strong session-management capability, and a crack staff of MIT-grad engineers. The company's transaction-based platform makes Isovia one of the most promising wireless middleware providers.

The vendor is not well known in the industry, but its efforts are most heavily focused on only two key verticals. Its platform is a hybrid of the all-important disconnected user support of today and the crucial transaction-based capabilities for the more advanced applications of tomorrow.

Industry Focus: insurance, retail/distribution, healthcare

Enterprise Clients: Intertape Polymer

Key Partnerships: Ciber, LiveSky, Symbol Technologies, Siebel Systems, Ironside Technologies

Funding: \$4 million (ITU, I-Sherpa, et al); second round expected to close next month

Middleware Product: Isovia M-Business Platform

Business Model: licensed and hosted

Isovia: "We're getting traction in the large enterprise space where people are connecting their mobile sales and services employees to back-end systems. That's where the value is going to be in this marketplace."

"We have a really solid engineering team, and the management team is a group of people who have repeatedly built successful companies." —Brian Barker, senior vice president of marketing and alliances

Ciber: "Isovia is a very interesting startup that has managed to gather one of the most advanced engineering teams that is currently addressing wireless solutions. The concern about Isovia is that they have a limited direct sales effort, and therefore they have fewer opportunities to get their story out into the market. Very few startups are going to survive, and a strong sales force will be a key component in determining which of these technologies will survive."

LiveSky: "Right now, I think Isovia has the best support for RIM devices of anyone out there, and they have extended that out to the Palm as well."

"If you have a client or an application where your natural inclination is to use a RIM BlackBerry, then Isovia becomes sort of a natural choice to drive it."

MobileQ

www.mobileq.com

New York, N.Y.

Middleware Product: XMLEdge

Business Model: licensed only

Founded: 1995

Background: MobileQ has built a great deal of traction through deployments with carriers such as Bell Mobility and Bell Canada. Its XMLEdge platform has proven to be one of the industry's most scalable, with several hundred thousand users deployed through channel partnerships.

With its roots in enterprise application consulting, MobileQ has one of the most developed offerings on the market. XMLEdge handles enterprise and transaction applications with support for a multitude of content sources, and the company also has a mobile messaging product as well.

Industry Focus: financial services, telecommunications (carriers), pharmaceuticals, et al

Enterprise Clients: CIBC, Broadview, Nortel, Bell Mobility, Bell Canada

Key Partnerships: EDS, Mobilocity, Epicentric

Funding: does not disclose (investors include Pequot Capital Management, Clarity Capital Management)

MobileQ: "A lot of middleware vendors haven't proven that their technology can be used by developers outside of their own organizations. Many of their products are really frameworks for development, and what they end up doing is shipping a bunch of their consultants with the product."

"We build a true software product that can be distributed without us having to ship people around." —Jessie Perla, chief technology officer

Gartner: "MobileQ has a strong solution that has been getting a lot of attention lately for its quick turnaround time. We spoke with a couple of significant telecom and professional consulting and systems integration firms who regarded XMLEdge as 'telco grade,' with little customization required and with good profile management and personalization."

Stellcom: "MobileQ's use of XML connectors to communicate with directory services, email, and other applications offers integration flexibility. Their breadth of protocol and device support is impressive and their early integration of voice technology is encouraging."

"Time will tell if WAGs who aren't aligned with application server vendors will survive."

Oracle

www.oracle.com

Redwood Shores, Calif.

Founded: 1977

Background: Even if the Oracle 9i Application Server Wireless Edition never goes beyond extending Oracle applications specifically, the enterprise giant will command a major share of the wireless middleware market.

To clear up some confusion, OracleMobile is the wireless division of Oracle Corp., and OracleMobile.com is the company's free wireless Web portal for consumers. The 9i Application Server Wireless Edition is the core mobile platform.

Industry Focus: telecommunications (carriers), financial services, healthcare, retail, et al

Enterprise Clients: Sprint, Birka Energi, Overseas Union Bank

Key Partnerships: Cap Gemini Ernst & Young, Motorola, Compaq, Research in Motion

Funding: NASD: ORCL (market cap 4.27.01: \$96.3 billion)

Middleware Product: Oracle 9i Application Server Wireless Edition

Business Model: licensing focused with hosted offering

Oracle: "I believe that we will be the go-mobile module on the majority of enterprise applications. Obviously we will be for Oracle applications, but I think we will also be for other enterprise applications, much like SAP uses the Oracle database to manage data across many different hardware platforms." —Jacob Christfort, CTO and vice president of product development

AMR Research: "I think from a full platform standpoint, they still have a long way to go. As far as integrating the database into the platform, their application suite still isn't wirelessly enabled. They have some work to do internally just to leverage their own technology, but they're working on that."

LiveSky: "I like the direction they're going, but I was really disappointed with the initial release (Oracle 9i Application Server Wireless Edition). My take on it was that it is basically just XML and style sheets. It enables Oracle users to go wireless a little easier, but it doesn't necessarily enable easier development of wireless applications."

Stellcom: "If you need to mobilize your email, calendars, and some basic reports, but you don't have any hot wireless developers, Oracle can handle the task. It's a fast and easy way to go wireless, but this is really just a bolt-on to the 9i Application Server rather than a stand-alone WAG. However, if you're looking for a basic WASP before committing to an enterprise platform, you should give OracleMobile a try."

Wireless Knowledge

www.wirelessknowledge.com

San Diego, Calif.

Founded: 1998

Background: Wireless Knowledge's core products are Workstyle, which mobilizes messaging platforms such as Exchange and Domino, and Anystyle, which extends corporate email, calendars, and contacts. The company recently introduced Echo, a middleware platform based on HTML transformation.

The vendor is co-owned by Microsoft and Qualcomm, which makes its position in wireless middleware somewhat difficult to determine. Echo can only extend data that resides on Web servers, so unless it upgrades or combines with a Microsoft platform, Wireless Knowledge's lifeblood will likely remain email and groupware.

Industry Focus: healthcare, financial services

Enterprise Clients: Pacific Coast Building Products

Key Partnerships: Microsoft, Qualcomm, Technology Integration Group, Commerce One

Funding: wholly and evenly owned by Microsoft and Qualcomm

Middleware Product: Echo, Workstyle (groupware), Anystyle (email, calendar, contacts)

Business Model: licensed only

Wireless Knowledge: "Echo is integrated with existing Web servers within the enterprise. It has a very lightweight footprint within the Web server so that companies retain the investment they've made in the infrastructure they've built. You don't have to go through a separate service provider or separate data center to perform the transformation processes." —Cullen Childress, product manager

LiveSky: "Wireless Knowledge has a strong out-of-the-box offering for email, and there's a lot of value in getting to synchronize with your Exchange Server. Here's a product that has (more-or-less) a fixed price tag, and you install it and get immediate added value. They're extending and adding more functionality than that, but I think they do their core product very well."

Stellcom: "You have to respect the lineage of Microsoft and Qualcomm. However, you also have to be pretty focused on mobilizing your Microsoft Exchange Server environment since that's the primary goal of this offering (Workstyle). What it does, it does well and Exchange does represent about half of the entire corporate groupware market. However, the real question is whether mobilizing email and calendars will be enough to survive the coming WAG shakeout."

Wysdom

www.wysdom.com

Richmond Hill, Ont.

Founded: 1999

Background: Wysdom had a former life as a wireless consulting firm named Wyrex, and the team's six years of experience with mobile business applications has led to one of the most diverse platforms in the market. Wysdom's offering ranges from mobile alerts to an entire suite designed specifically for carriers.

The company is also noted for its Messenger products, which provide various interfaces for peer-to-peer short-messaging capability. These features are built around its core Mobile Application Platform, which performs the more "traditional" functions of wireless middleware.

Industry Focus: financial services, telecommunications (carriers), et al

Enterprise Clients: Laurentian Bank, Ericsson

Key Partnerships: DMR, Amdocs, BEA Systems, Aspiro

Funding: \$57.0 million (Vengrowth, CIBC World Markets)

Middleware Product: Mobile Application Platform

Business Model: licensing focused with hosted offering

Wysdom: "Number one, we're very well positioned from a cash perspective. And secondly, we are not a non-profit organization. As long as a customer is convinced that there is an ROI for them, there is a business model for them, and they're willing to spend the money to do it, we will be there to help them get through it." —Kashif Hassan, president and CEO

Ciber: "Wysdom can extend data at the application layer, and they have already been successful at building wireless portals for key players in the space. As a result of being Canadian, they are neighbors to Research in Motion (RIM).

"That could lead an imaginative mind to wonder if they won't be the company that really focuses on extending the functionality of what is the hottest wireless device today: the RIM BlackBerry pager."

LiveSky: "We're very impressed with how well Wysdom is connected in the pager space—the one-way and two-way messaging arena. It's part of wireless that doesn't get written up a lot, but in many cases for clients, there is great added value in very short, alert-based transactions.

"Wysdom seems to be one of the strongest players in that, both in terms of their own software and in the fact that you can use them as an ASP."